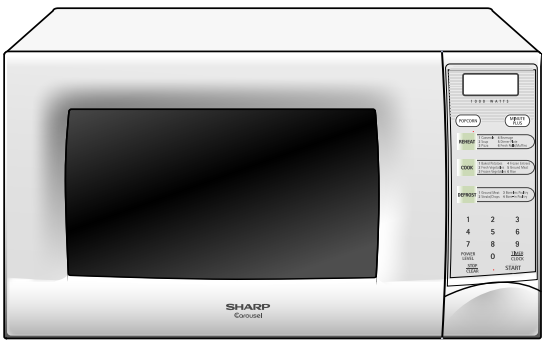
SHARP

SUPPLEMENTAL SERVICE MANUAL

S13M204R401FE



R-401FW

MICROWAVE OVEN

MODELS R-401FK R-401FW

This is a supplemental Service Manual for Microwave Oven models R-401FK and R-401FW. This model is quite similar to the base models R-402FW/R-404FK; (S42M185R402FE).

This supplemental manual must be used in conjunction with the base model service manual for complete operation, service, safety and replacement parts information.

In the interest of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

WARNING TO SERVICE PERSONNEL: Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock. (High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..)

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SHARP ELECTRONCS CORPORATION

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The contents are subject to change without notice.

Service Headquarters: Sharp Plaza, Mahwah, New Jersey, 07430-2135

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.
(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.
(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(e) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

BEFORE SERVICING

Before servicing an operative unit, perform a microwave emission check as per the Microwave Measurement Procedure outlined in this service manual.
If microwave emissions level is in excess of the specified limit, contact SHARP ELECTRONICS CORPORATION immediately @1-800-237-4277.

If the unit operates with the door open, service person should 1) tell the user not to operate the oven and 2) contact SHARP ELECTRONICS CORPORATION and Food and Drug Administration's Center for Devices and Radiological Health immediately.

Service personnel should inform SHARP ELECTRONICS CORPORATION of any certified unit found with emissions in excess of 4mW/cm^2. The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

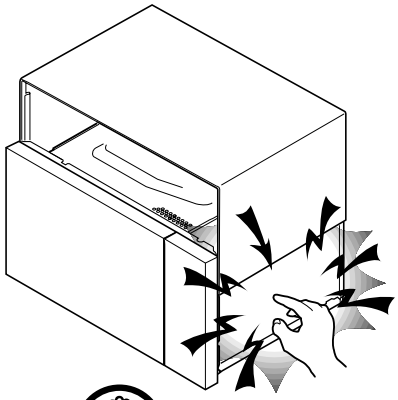
WARNING TO SERVICE PERSONNEL

Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock.

(Example)

High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..

Read the Service Manual carefully and follow all instructions.



Don't Touch !
Danger High Voltage

Before Servicing

1. Disconnect the power supply cord , and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

WARNING: RISK OF ELECTRIC SHOCK. DISCHARGE THE HIGH-VOLTAGE CAPACITOR BEFORE SERVICING.

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Whenever troubleshooting is performed the power supply must be disconnected. It may, in some cases, be necessary to connect the power supply after the outer case has been removed, in this event:

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

When the testing is completed,

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the outer case (cabinet).
6. Reconnect the power supply cord after the outer case is installed.
7. Run the oven and check all functions.

After repairing

1. Reconnect all leads removed from components during testing.
2. Reinstall the outer case (cabinet).
3. Reconnect the power supply cord after the outer case is installed.
4. Run the oven and check all functions.

Microwave ovens should not be operated empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out **Before Servicing** procedure and re-examine the connections to the component being tested.

When all service work is completed and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test should be carried out.

MICROWAVE MEASUREMENT PROCEDURE

A. Requirements:

1) Microwave leakage limit (Power density limit): The power density of microwave radiation emitted by a microwave oven should not exceed 1mW/cm^2 at any point 5cm or more from the external surface of the oven, measured prior to acquisition by a purchaser, and thereafter (through the useful life of the oven), 5 mW/cm^2 at any point 5cm or more from the external surface of the oven.
2) Safety interlock switches:
   Primary interlock relay switch shall prevent microwave radiation emission in excess of the requirement as above mentioned. Secondary interlock relay and door sensing switch shall prevent microwave radiation emission in excess of 5 mW/cm2 at any point 5cm or more from the external surface of the oven.

B. Preparation for testing:
Before beginning the actual measurement of leakage, proceed as follows:
1) Make sure that the actual instrument is operating normally as specified in its instruction booklet.

Important:
Survey instruments that comply with the requirement for instrumentation as prescribed by the performance standard for microwave ovens, 21 CFR 1030.10(c)(3)(i), must be used for testing.

2) Place the oven tray in the oven cavity.
3) Place the load of 275±15 ml (9.8 oz) of tap water initially at 20±5^{O}C (68^{O}F) in the center of the oven cavity.
   The water container shall be a low form of 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3-1/2 in.) and made of an electrically nonconductive material such as glass or plastic.
   The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
4) Set the cooking control on Full Power Cooking Mode.
5) Close the door and select a cook cycle of several minutes. If the water begins to boil before the survey is completed, replace it with 275 ml of cool water.

C. Leakage test:

Closed-door leakage test (microwave measurement):
1) Grasp the probe of the survey instrument and hold it perpendicular to the gap between the door and the body of the oven.
2) Move the probe slowly, not faster than 1 in./sec. (2.5 cm/sec.) along the gap, watching for the maximum indication on the meter.
3) Check for leakage at the door screen, sheet metal seams and other accessible positions where the continuity of the metal has been breached (eg., around the switches, indicator, and vents).
   While testing for leakage around the door, pull the door away from the front of the oven as far as is permitted by the closed latch assembly.
4) Measure carefully at the point of highest leakage and make sure that the highest leakage is no greater than 4mW/cm^2, and that the primary interlock switch/secondary interlock relay does turn the oven OFF before any door movement.

NOTE: After servicing, record data on service invoice and microwave leakage report.

SUPPLEMENTAL SERVICE MANUAL

SHARP

MICROWAVE OVEN

R-401FK/R-401FW

FOREWORD

This supplemental Manual has been prepared to provide Sharp Electronics Corp. Service Personnel with Operation and Service Information for the SHARP MICROWAVE OVENS, R-401FK and R-401FW.

The model R-401FK/FW is quite similar to base models R-402FW/R-404FK (Ref.# S42M185R402FE).

It is recommended that service personnel carefully study the entire text of this manual so that they will be qualified to render satisfactory customer service.

Check the interlock switches and the door seal carefully. Special attention should be given to avoid electrical shock and microwave radiation hazard.

WARNING

Never operate the oven until the following points are ensured:
(A) The door is tightly closed.
(B) The door brackets and hinges are not defective.
(C) The door packing is not damaged.
(D) The door is not deformed or warped.
(E) There is no other visible damage with the oven.

Servicing and repair work must be carried out only by trained service personnel.

DANGER

Certain initial parts are intentionally not grounded and present a risk of electrical shock only during servicing. Service personnel - Do not contact the following parts while the appliance is energized;
High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness;
If provided, Vent Hood, Fan assembly, Cooling Fan Motor.

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to voltage above 250V.

All the parts marked "Δ" on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

PRODUCT DESCRIPTION
GENERAL INFORMATION
PARTS LIST

SHARP ELECTRONICS CORPORATION

**SHARP PLAZA, MAHWAH,
NEW JERSEY 07430-2135**

SPECIFICATION

ITEM	DESCRIPTION
PowerRequirements	120 Volts 13.0 Amperes, 1550 watts 60 Hertz Single phase, 3 wire grounded
Power Output	1000 watts (IEC 705 TEST PROCEDURE) Operating frequency of 2450MHz
Case Dimensions	Width 21-11/16" Height 12-3/8" Depth 17-3/8"
Cooking Cavity Dimensions 1.6 Cubic Feet	Width 15 Height 9-7/16" Depth 16-3/4"
Control Complement	Touch Control System Clock (1:00 - 12:59) Timer (0 - 99 min. 99 seconds) Microwave Power for Variable Cooking Repetition Rate; P-HI ..... Full power throughout the cooking time P-90 ..... approx. 90% of Full Power P-80 ..... approx. 80% of Full Power P-70 ..... approx. 70% of Full Power P-60 ..... approx. 60% of Full Power P-50 ..... approx. 50% of Full Power P-40 ..... approx. 40% of Full Power P-30 ..... approx. 30% of Full Power P-20 ..... approx. 20% of Full Power P-10 ..... approx. 10% of Full Power P-0 ..... No power throughout the cooking time MINUTE PLUS pad, Cook pads, Defrost pads, Number selection pads, Power Level pad, Timer/Clock pad,Stop/Clear pad, START pad, Reheat pads, and Popcorn.
Oven Cavity Light	Yes
Safety Standard	UL Listed FCC Authorized DHHS Rules, CFR, Title 21, Subchapter J

GENERAL INFORMATION

GROUNDING INSTRUCTIONS

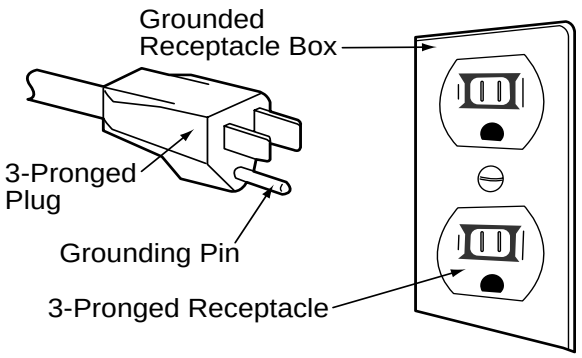
This oven is equipped with a three prong grounding plug. It must be plugged into a wall receptacle that is properly installed and grounded in accordance with the National Electrical Code and local codes and ordinances.
In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current.

WARNING: Improper use of the grounding plug can result in a risk of electric shock.

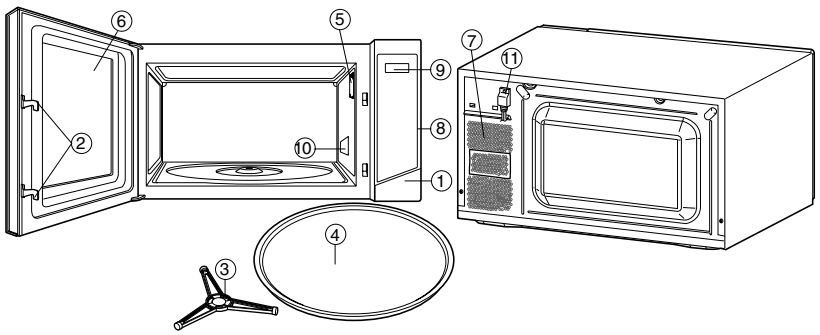
Electrical Requirements
The electrical requirements are a 120 volt 60 Hz, AC only,
15 or 20 amp. fused electrical supply. It is recommended that a separate circuit serving only this appliance be provided. When installing this appliance, observe all applicable codes and ordinances.
A short power-supply cord is provided to reduce risks of becoming entangled in or tripping over a longer cord.
Where a two-pronged wall-receptacle is encountered, it is the personal responsibility and obligation of the customer to contact

a qualified electrician and have it replaced with a properly grounded three-pronged wall receptacle or have a grounding adapter properly grounded and polarized. If the extension cord must be used, it should be a 3-wire, 15 amp. or higher rated cord. Do not drape over a countertop or table where it can be pulled on by children or tripped over accidentally.

CAUTION: DO NOT UNDER ANY CIRCUMSTANCES CUT OR REMOVE THE ROUND GROUNDING PRONG FROM THIS PLUG.

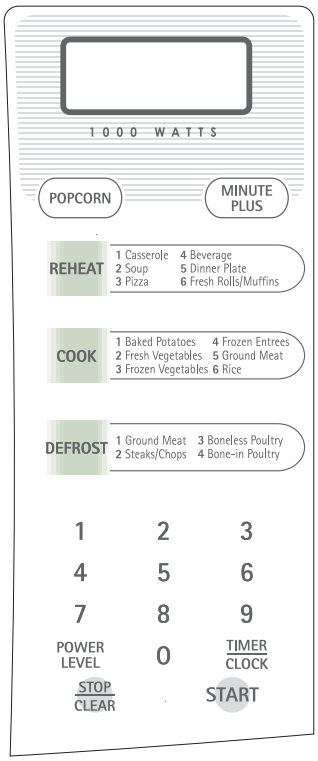


OVEN DIAGRAM



1. One touch door open button.
   Push to open door.
2. Door latches.
   The oven will not operate unless the door is securely closed.
3. Removable turntable support.
4. Removable turntable.
   The turntable will rotate clockwise or counterclockwise.
5. Oven lamp.
   It will light when oven is operating or door is opened.
6. Oven door with see-through window.
7. Ventilation openings. (Rear)
8. Auto-Touch control panel.
9. Time display: Digital display, 99 minutes 99 seconds.
10. Wave guide cover.
11. Power supply cord

TOUCH CONTROL PANEL



NOTE:
The directed features are disabled after one minute when the oven is not in use. These features are automatically enabled when the door is opened and closed or the STOP/ CLEAR pad is pressed.

R-401FW

PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V. "§" MARK: PARTS DELIVERY SECTION.

	REF. NO.	PART NO.	§			
				ELECTRIC PARTS		
	1- 1	RC-QZA234WRE0	M	High voltage capacitor	1	AP
	1- 2	FH-DZB013MRY0	M	High voltage rectifier assembly	1	AK
	1- 3	QSOCLB006MRE0	M	Oven lamp socket	1	AE
	1- 4	RLMPTA081WRZZ	M	Oven lamp	1	AD
	1- 5	RMOTEA346WRE0	M	Fan motor	1	AR
	1- 6	FFS-BA019/KIT	M	Monitor switch (V-16G-2C25), C/T fuse (20A 250V AC) & Inst.	1	AF
	1- 7	QSW-MA085WRE0	M	Primary interlock switch and door sensing switch (V-5230Q)	2	AE
	1- 8	QFS-TA050WRZZ	M	C/T fuse 150°C	1	AE
	1- 9	QFS-TA014WRE0	M	Cavity temperature fuse 150°C	1	AF
Δ	1-10	RV-MZA305WRZZ	M	Magnetron	1	BB
	1-11	RMOTDA211WRE0	M	Turntable motor	1	AL
	1-12	RTRN-B077MRE0	M	Power transformer	1	AZ
	1-13	FACCDB003MRE0	M	Power supply cord	1	AM
				CABINET PARTS		
	2- 1	GDAI-B068MRP0	M	Base plate	1	AN
	2- 2	GLEGPB004MRF0	M	Foot	4	AB
	2- 3	GCABUB097MRP0	M	Outer case cabinet [R-401FK]	1	AU
	2- 3	GCABUB088MRP0	M	Outer case cabinet [R-401FW]	1	AU
				CONTROL PANEL PARTS		
	3- 1	CPWBFB063MRU0	M	Control unit	1	BA
	3- 1A	QCNCMA275DRE0	J	2-pin connector (CN-B)	1	AB
	3- 1B	FW-VZB194MRE0	M	Lead wire harness (WH-1)	1	AG
	C1	RC-KZA087DRE0	J	Capacitor 0.1 uF 50V	1	AA
	C2	VCEA0A1EW108M	M	Capacitor 1000 uF 25V	1	AB
	C3	VCEA0A1AW227M	M	Capacitor 220 uF 10V	1	-
	C21	VCEAB31VW106M	J	Capacitor 10 uF 35V	1	AA
	D1-4	RH-DZA006PRE0	J	Diode (1N4002)	4	AD
	D20-22	VHD1SS270A/-1	J	Diode (1SS270A)	3	AA
	D40	VHD1SS270A/-1	J	Diode (1SS270A)	1	AA
	LD1-4	RH-PXA002DRZZ	M	Light emitting diode	4	-
	Q21	VSKRC243M//-3	J	Transistor (KRC243M)	1	AB
	R1	VRD-B12HF561J	J	Resistor 560 ohm 1/2W	1	AA
	RY1-2	RRLY-A114DRE0	J	Relay (DU12D1-1PR(M))	2	AN
	SP1	RALM-A019DRZZ	M	Buzzer	1	-
	T1	RTRNPA110DRE0	J	Transformer	1	AP
	VRS1	RH-VZA032DRE0	J	Varistor (10G471K)	1	AE
	ZD1	VHEHZ4C3///-1	J	Zener diode (HZ4C3)	1	AA
	3- 2	FPNLCB386/KIT	M	Control panel sub assembly [R-401FK]	1	AY
	3- 2	FPNLCB387/KIT	M	Control panel sub assembly [R-401FW]	1	AY
	3- 2-1	FUNTKB334/KIT	M	Key unit [R-401FK]	1	AN
	3- 2-1	FUNTKB335/KIT	M	Key unit [R-401FW]	1	AN
	3- 2-2	JBTN-B118MRF0	M	Open button [R-401FK]	1	AD
	3- 2-2	JBTN-B119MRF0	M	Open button [R-401FW]	1	AE
	3- 2-3	MSPRTA050WRE0	M	Open button spring	1	AA
	3- 3	PSHEPA798WREZ	M	LCD sheet	1	AG
	3- 4	QCNC-B001MRE0	M	Rubber connector	1	AD
	3- 5	RLCDSA107DRZZ	M	Light crystal display	1	-
	3- 6	XEPSD30P10XS0	M	Screw; 3mm x 10mm	3	AB
				OVEN PARTS		
	4- 1	LBNDKB007MRP0	M	H.V. Capacitor band	1	AB
	4- 2	LANGTB060MRP0	M	Chassis support	1	AD
	4- 3	PHOK-B018MRF0	M	Latch hook	1	AF
	4- 4	MLEVPB016MRF0	M	Switch lever	1	AD
	4- 5	PDUC-B120MRF0A	M	Magnetron duct	1	AG
	4- 6	NFANPB001MRE0	M	Fan blade	1	AC
	4- 7	PDUC-B088MRF0	M	Fan duct	1	AC
	4- 8	----------	M	Oven cavity (Not a replaceable part)	1	--
	4- 9	PCOVPB073MRP0	M	Waveguide cover	1	AC
	4-10	PPACGB014MRF0	M	Turntable motor packing	1	AA
	4-11	PCUSGB033MRP0	M	Cushion	1	AA

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
			DOOR PARTS		
5 -1	FCOV-B202MRK0	M	Door frame assembly [R-401FK]	1	AQ
5 -1	FCOV-B203MRK0	M	Door frame assembly [R-401FW]	1	AQ
5 -2	LSTPPB021MRF0	M	Latch head	1	AD
5 -3	MSPRTA046WRE0	M	Latch spring	1	AB
5 -4	FDORFB062MRT0	M	Door panel	1	AX
5- 5	PSHEPB021MRE0	M	Sealer film	1	AD
5- 6	HPNL-B087MRE0	M	Door screen	1	AK
5- 7	GCOVHB042MRF0	M	Choke cover	1	AG
			MISCELLANEOUS		
6- 1	FW-VZB125MRE0	M	Stop switch harness	1	AF
6- 2	FW-VZB192MRE0	M	Main wire harnes	1	AU
6- 3	FROLPB025MRK0	M	Turntable support	1	AN
6- 4	NTNT-A108WREZ	M	Turntable tray	1	AM
6- 5	TCAUAB045MRR0	M	Monitor caution label	1	AA
6- 6	TCAUAB038MRR0	M	DHHS/Screw caution label	1	AB
6- 7	TINSEB338MRK0	M	Operation manual	1	AD
6- 8	QW-QZB016MRE0	M	High voltage wire A	1	AC
			SCREWS,NUTS AND WASHERS		
7- 1	LX-BZA041WRE0	M	Special screw	5	AA
7- 2	LX-CZ0052WRE0	M	Special screw	2	AA
7- 3	XHTSD40P12RV0	M	Screw : 4mm x 12mm	1	AA
7- 4	XOTSD40P12000	M	Screw : 4mm x 12mm	8	AA
7- 5	XCBSD30P08000	M	Screw : 3mm x 8mm	3	AA
7- 6	LX-CZA038WRE0	M	Special screw	2	AA
7- 7	XHTSD40P08RV0	M	Screw : 4mm x 8mm	3	AA
7- 8	LX-CZA070WRE0	M	Special screw (Torx tamper proof screw)	2	AB

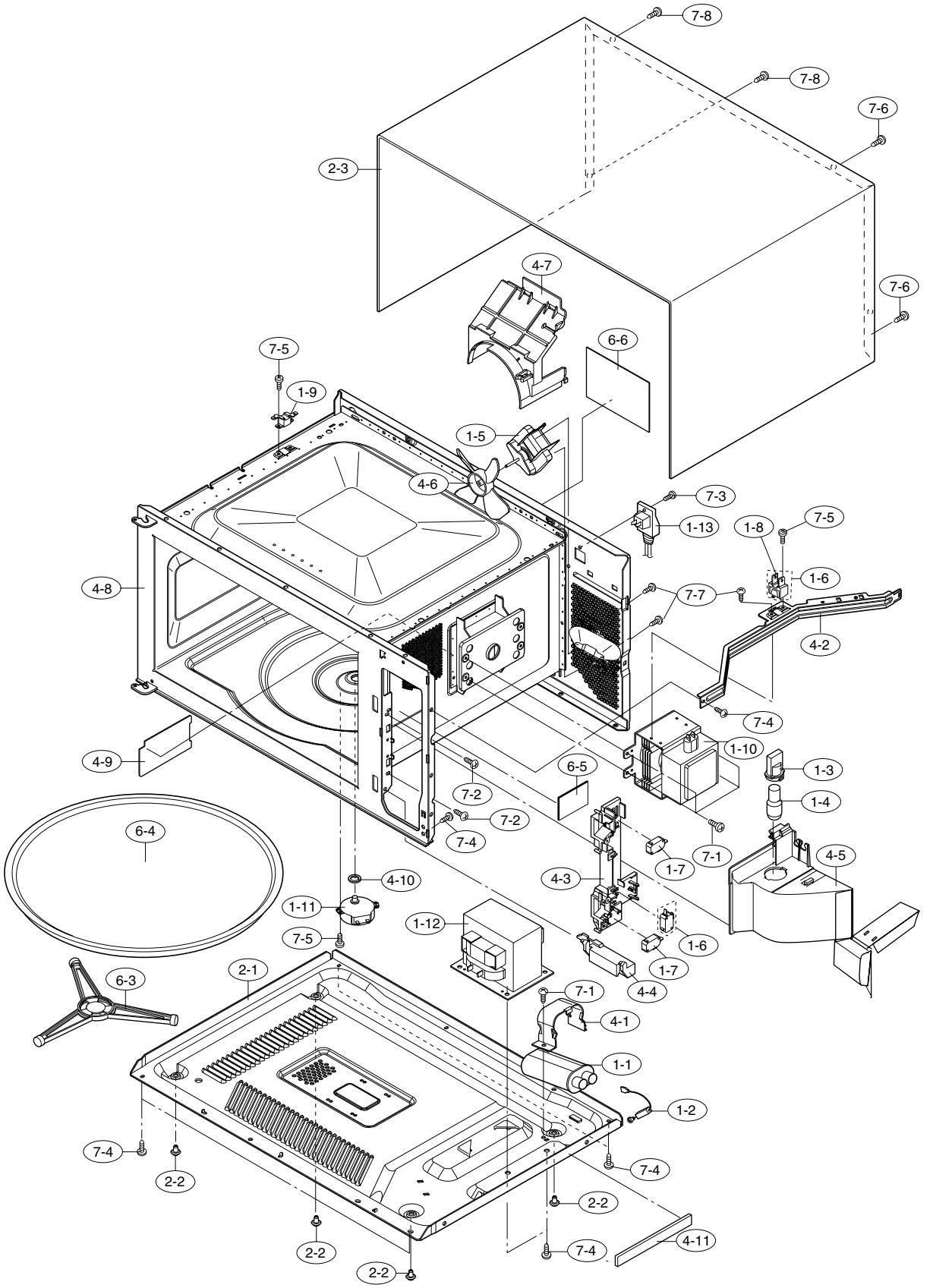
HOW TO ORDER REPLACEMENT PARTS

To have your order filled promptly and correctly, please furnish the following information.

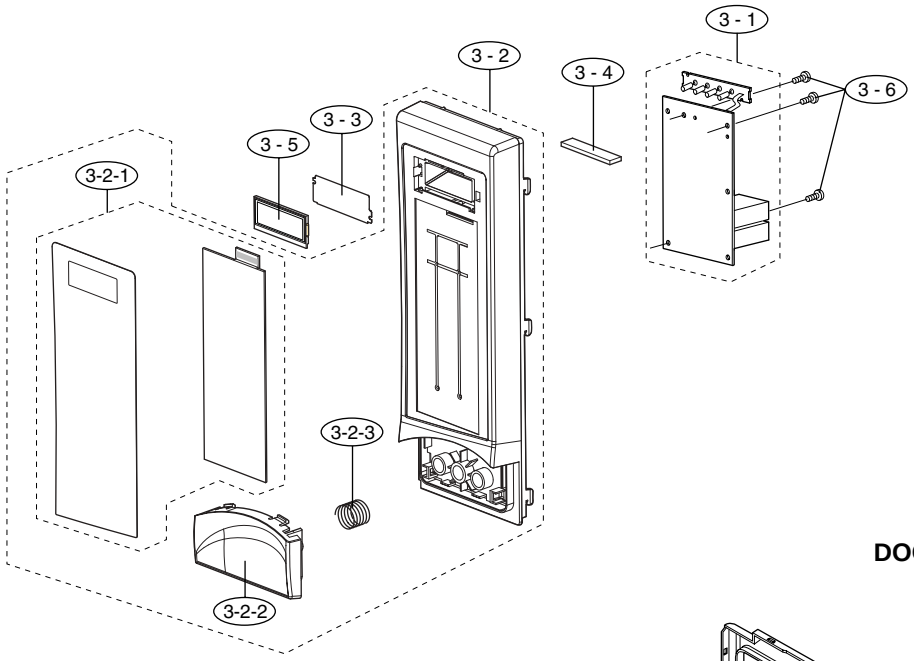
1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

Order Parts from the authorized SHARP parts Distributor for your area.
Defective parts requiring return should be returned as indicated in the Service Policy.

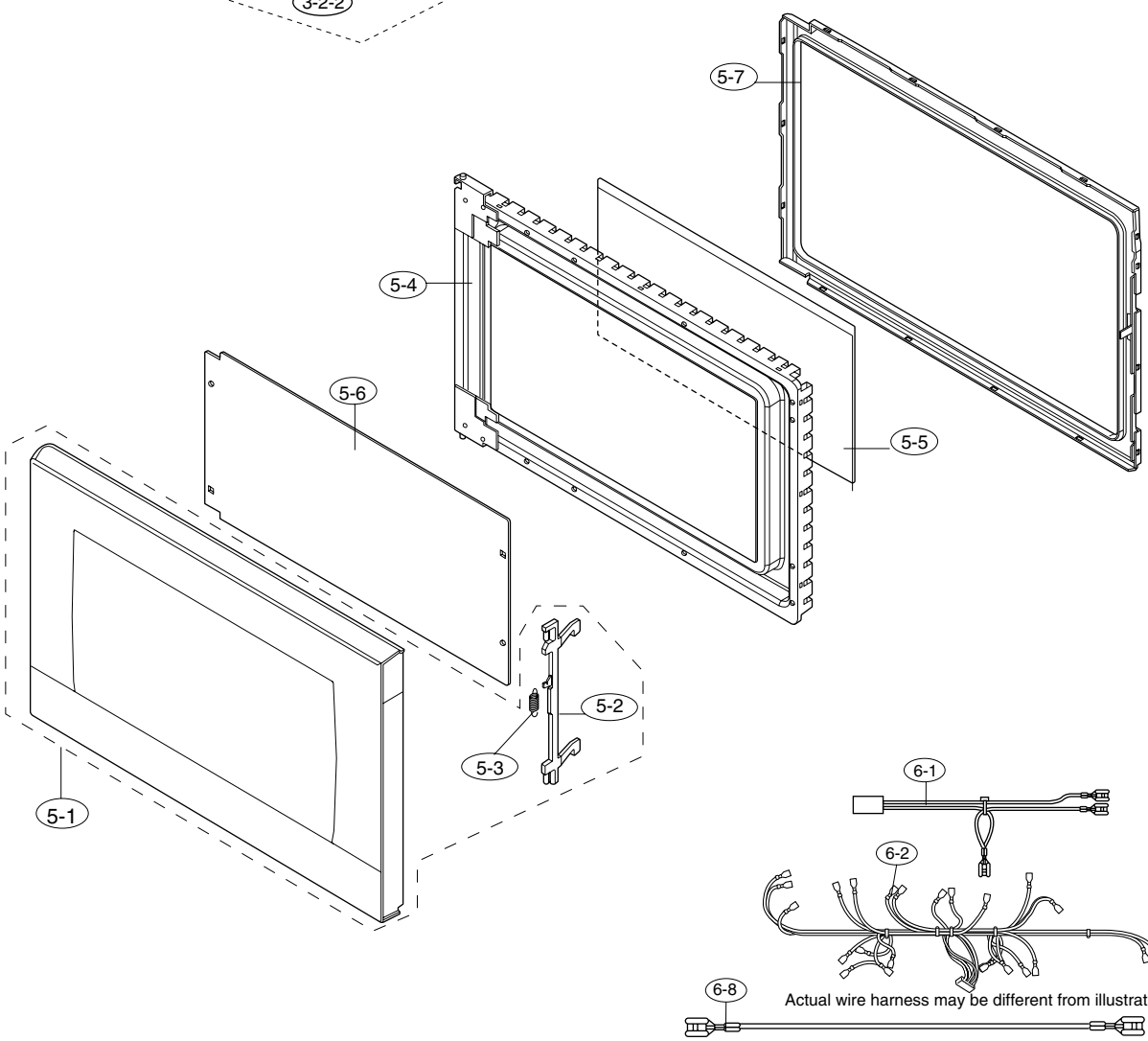
OVEN AND CABINET PARTS



CONTROL PANEL PARTS

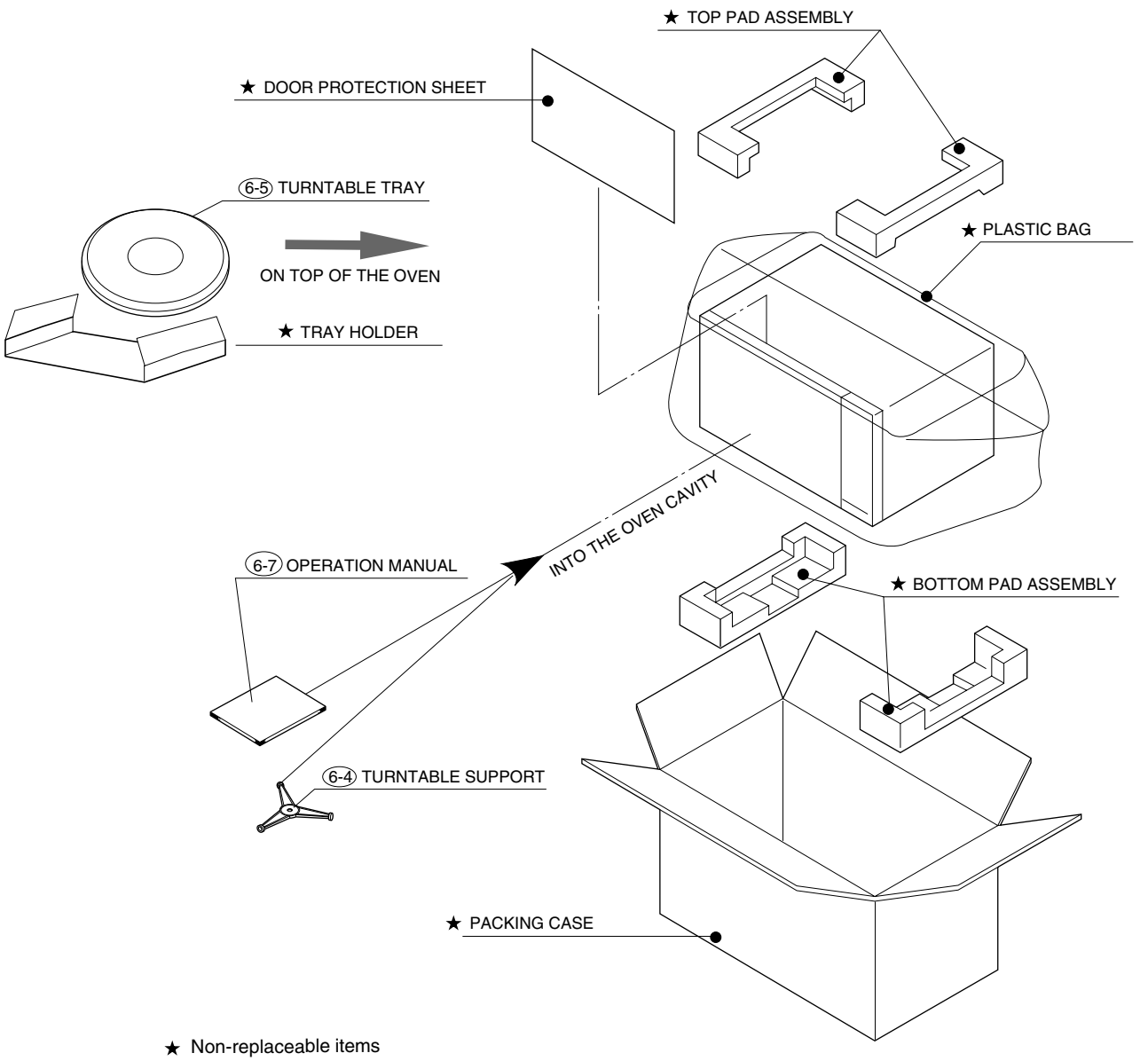


DOOR PARTS



Actual wire harness may be different from illustration.

PACKING AND ACCESSORIES



★ Non-replaceable items

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